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EXAMINER	
PHAM, BRENDA H	
ART UNIT	PAPER-NUMBER
2664	

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/801,149

Applicant(s)

SHAHAR ET AL

Examiner

Brenda Pham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9,14-18,20,21,23,27 and 31-33 is/are rejected.
- 7) ☐ Claim(s) 3,10-13,19,22,24-26 and 28-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-33 have been examined.

#### ***Drawings***

2. The drawings are objected to because the legend describes each and every elements of the figures is required.

#### ***Claim Objections***

3. Claim 13, on page 44 is objected to because of the following informalities:  
There is a typo on page 44, line 5. Claim 13 should be corrected to claim 33.

Claim 33, it is not clear what is meant by "a set of computer readable instruction stored in an electronic signal." Should it be –a set of computer readable instruction stored in an electronic device."

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 32 is rejected under 35 USC § 112 as being lack of antecedent basis in the claim.

Claim 32 recites the limitation "The method according to claim 27, wherein said computer instructions are compiled computer instructions stored as an

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executable program on said computer readable media". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-2, 4, 6-8, 14-16 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by MOULSLEY (US 6,407,993 B1).

Claims 1, 6 and 27, MOULSLEY discloses a method of preparing a packet communication, comprising the steps of: determining a modulation scheme for each data field of a set of data fields; placing an indication of the determined modulation schemes in a super frame header; modulating each of the data fields according to the determined modulation schemes; and transmitting the super frame header and each of the modulated data fields (see figure 2, column 3, lines 44-51).

{MOULSLEY teaches determining a modulation scheme for each data field by for example high order modulation (e.g. 16-QAM) could be used on the downlink for transmission to secondary stations near the primary

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station, where C/I is relatively good. Similarly, robust modulation (e.g BPSK) and coding schemes can be used to reach mobiles near the edge of the cell where C/I is poor. An indication of the modulation scheme is placed in the header of frame. Figure 2 shows a super frame with header H, followed by one or more data burst DB1, DB2, DB3, DB4. The header H contains an indication of the formats and timing of each data burst. The format of each data burst included modulation scheme.}

Claim 14, MOULSLEY teaches a method of receiving dynamically modulated data packets, comprising the steps of:

Receiving header data containing a modulation scheme used to modulate at least one data packet; receiving the data packets; and demodulating the data packets according to the modulation scheme contained in the header data.

**{A demodulator 84 demodulates a signal on its input using a modulation scheme selected by the controller 42 in response to data in the header (column 8, line 65-67)}.**

Claims 2, 7, 15, MOULSLEY further teaches wherein said indication is an index that identifies a set of at least one of a modulation format, symbol rate, and FEC scheme to be used on the data packets (column 3, lines 44-51). **{A header H contains an indication of the formats of each data field. The format includes modulation.}**

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Claims 4, 8, 16, the method according to claim 7, wherein said modulation scheme is one of QAM16 and QAM 64 **(page 5)**.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 9, 17, 20-21, 23 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOULSLEY (US 6,407,993).

Claims 5, 9 and 17, as explained in the rejection statement of claims 1, 6 and 14 (parent claim). MOULSLEY discloses all the claim limitations recited in (parent claim).

Although MOULSLEY does not specifically teach wherein said step of transmitting comprises transmitting said header and data packets using OFDM, the cited limitation is well known in the art and also taught in the back ground of **MOULSLEY (see column 1, lines 40-45)**.

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement the step of transmitting header and data packets using OFDM in MOULSLEY.

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Claims 20 and 21, MOULSLEY teach that the modulation scheme is selected for modulating a data packet for transmitting downstream from wireless hub (base station) to wireless modem (mobile unit) base on difference modulation scheme (e.g. a6-QAM, QPSK or 128-FSK) by determine the signals intended for the wireless modem that is close to the wireless hub which experiencing low co-channel interference (e.g. 16-QAM), while for those further away QPSK might be appropriate. For wireless modem at the cell boundary experiencing significant co-channel interference a robust modulation of low bandwidth efficiency might be necessary (e.g 128-FSK) (column 4, line 12-20).

Although MOULSLEY does not teach specifically the steps of: transmitting a first packet from a wireless hub to wireless modem utilizing a first downstream modulation type of a plurality of downstream modulation types; receiving the first packet at the wireless modem; demodulating the first packet at the wireless modem according to the first downstream modulation type; transmitting a second packet from the wireless hub to the wireless modem utilizing a second downstream modulation type of the plurality downstream modulation types that is different than the first downstream modulation type; receiving the second packet at the wireless modem; and demodulating the second packet at the wireless modem according to the second downstream modulation type.

It would have been obvious to those having ordinary skill in the art at the time of the invention was made implement the steps above, such that transmitting downstream a first packet utilizing a first downstream modulation type, for example using high order modulation 16-QAM, when the wireless

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modem (mobile unit) is close to the primary station (base station) which can experiencing low co-channel interference from adjacent cells. When the wireless modem (mobile unit) moved far away from the primary station (base station), it began to experience high co-channel interference from adjacent cells. In this case a second packet can be transmitted using QPSK. At the wireless modem (mobile unit), a receiver comprising a demodulator 84 can demodulated the received first and second packet according to the modulation scheme (e.g. 16-QAM or QPSK) indicates in the first and second packet header.

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement a method for dynamic downstream communication such as recited in claim 20 for transmitting packets from base station to mobile station using difference modulation scheme to suit the quality of the link between the base station and the addressed mobile station.

Claim 23, MOULSLEY further teach a header applied to the downlink transmission includes information about the location of the respective data packets relative to a reference point and the modulation scheme applied to each data packet.

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement the step of identifying the first downstream modulation type by reading a header of the first packet to identity the first downstream modulation type; and to read a header of the second packet to identify the second downstream modulation type of the second packet.



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Claims 32 and 33, as explained in the rejection statement of claims 20 and 27 (parent claims). MOULSLEY discloses all claim limitations recited in claims 20 and 27. Although MOULSLEY does not teach the method is implement using a set of computer readable instruction, it is well known that computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer-related system or method.

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement a method of preparing a packet communication using difference modulation scheme, such as that taught by MOULSLEY using computer-readable instruction.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over MOULSLEY (US 6,407,993) in view of TIEDEMANN, Jr. et al (US 6,035,209).

Claim 18, as explained in the rejection statement of claim 14 (parent claim), MOULSLEY discloses all claims limitations recited in claim 14.

MOULSLEY does not teach preparing a status message indicating a quality of transmissions received; and transmitting the status message.

TEIDEMANN, Jr. et al, in the same field of endeavor, teach a base station transmits packets of data to a mobile station. The mobile station receives, demodulates and decodes the received packet. If the mobile station determines that the received packet cannot be reliably decoded, it sets the normally '0' quality response power control bit to '1' indicating the situation to the base

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station. In response, the base station increases the transmission power of the signal to the mobile station.

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement the step of preparing and transmitting the status message to indicate a quality of transmission received to notify the base station the quality of the packet signal received.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over MOULSLEY (US 6,407,993) in view of SCHEIBEL, Jr. et al (US 6,212,240 B1).

Claim 31, as explained in the rejected statement of claim 27 (parent claim), MOULSLEY disclose all the claim limitations recited in claim 27, MOULSLEY does not teach wherein the header portion is modulated utilizing a first type of modulation and the data portion is modulated utilizing a second type of modulation different than the first type of modulation.

SCHEIBEL, Jr. et al, in the same field of endeavor, teach this claim limitation (column 4, line 10-22).

**{The message header is preferably transmitted to the target communication device using a QPSK modulation, and the data blocks are preferably transmitted to the target communication device using 64-ary OQM. Since the header control information is important to processing message and is relatively short, the message header is always transmitted at the lowest modulation rate, to maximize the likelihood of successful transfer of the control information. On the other hand, the data blocks are**

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**generally much larger than the control information; thus, they are transmitted at the higher data rates, at least initially, to minimize bandwidth consumption.}**

Therefore, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement the steps of using differences modulation scheme for header and payload, in MOULSLEY, such as that taught by SCHEIBEL, Jr. et al to minimize bandwidth consumption.

***Allowable Subject Matter***

12. Claims 3, 10-13, 19, 22, 24-26 and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art made of record fails to teach or fairly suggest the method of claim 2, further comprising the step of transmitting a list of indexes and corresponding modulation schemes prior to transmitting the super frame header and data packets recited in claim 3.

The prior art further fails to teach or fairly suggest the steps of receiving a status message transmitted from a receiver; and selecting the modulation scheme based on the received status message as recited in claims 10-13.

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The prior art made of record fails to teach the method according to claim 18, wherein said status message includes error count information describing a number of errors detected in the transmissions received recited in claim 19.

The prior art further fails to teach in combination transmitting a third packet from the wireless hub to the wireless modem utilizing the first downstream modulation type of the plurality of downstream modulation types, wherein the third packet is transmitted prior to transmission of the second packet; receiving the third packet at the wireless modem; and demodulating the third packet at the wireless modem according to the first downstream modulation type as recited in claim 22.

The prior art further fails to teach the method of claim 20 comprising determining at the wireless modem a carrier to noise ratio of a carrier signal utilized to transmit the first packet; transmitting the carrier to noise ratio of the carrier signal utilized to transmit the first packet from the wireless modem to the wireless hub; and determining at the wireless hub the second modulation type based upon the carrier to noise ratio recited in claims 24-25.

The prior art fails to teach the method of claim 20 further comprising transmitting a training packet from the wireless hub to the wireless modem.

The prior art made of record fails to teach wherein the header portion further comprises timing and synchronization for the particular information signal recited in claim 28.

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The prior art made of record further fails to teach wherein the data portion comprises a in-phase pilot signal that is capable of being utilized to determine the frequency of the carrier signal recited in claim 29.

The prior art fails to teach or fairly suggest in combination wherein the data portion comprises a fixed data pattern and wherein the information signal is utilized as a training signal recited in claim 30.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (571) 272-3135. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin, can be reached on (571) 272-3134.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

October 20, 2004

Brenda Pham

A handwritten signature in cursive script that reads "Brenda A. Pham". The signature is written in dark ink and is positioned below the printed name "Brenda Pham".